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WATER SUPPLY SUMMARY AND OUTLOOK FOR OREGON



U. S. DEPARTMENT of AGRICULTURE ★ SOIL CONSERVATION SERVICE

Collaborating with

OREGON DEPARTMENT OF WATER RESOURCES

AS OF
OCT. 1, 1977

Data included in this report were obtained by the agencies named above in cooperation with Federal, State and private organizations listed inside the back cover of this report.

TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season will interact with a resultant average effect on runoff. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1900 snow courses in Western United States and in the Columbia Basin in British Columbia. Networks of automatic snow water equivalent and related data sensing devices, along with radio telemetry are expanding and will provide a continuous record of snow water and other parameters at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

COVER PHOTO: SNOW COURSE MEASUREMENTS BY A SURVEY TEAM IN UTAH'S WASATCH RANGE.
ORC-254-10

PUBLISHED BY SOIL CONSERVATION SERVICE

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, West Technical Service Center, Room 510, 511 N.W. Broadway, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	Room 129, 2221 East Northern Lights Blvd., Anchorage, Alaska 99504
Arizona	Room 3008, 6029 Federal Building, Phoenix, Arizona 85025
Colorado (N. Mex.)	P. O. Box 17107, Denver, Colorado 80217
Idaho	Room 345, 304 N. 8th. St., Boise, Idaho 83702
Montana	P. O. Box 98, Bozeman, Montana 59715
Nevada	P. O. Box 4850, Reno Nevada 89505
Oregon	1220 S.W. Third Ave., Portland, Oregon 97204
Utah	4012 Federal Bldg., 125 South State St., Salt Lake City, Utah 84138
Washington	360 U.S. Court House, Spokane, Washington 99201
Wyoming	P. O. Box 2440, Casper, Wyoming 82602

PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Water Supply Forecast and Snow Surveys Unit, California Department of Water Resources, P. O. Box 388, Sacramento, California 95802 --- and for British Columbia by the Department of Lands, Forests and Water Resources, Water Resources Service, Parliament Building, Victoria, British Columbia



WATER SUPPLY OUTLOOK FOR OREGON

and
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

Issued

OCTOBER 8, 1977

Issued by

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PORTLAND, OREGON

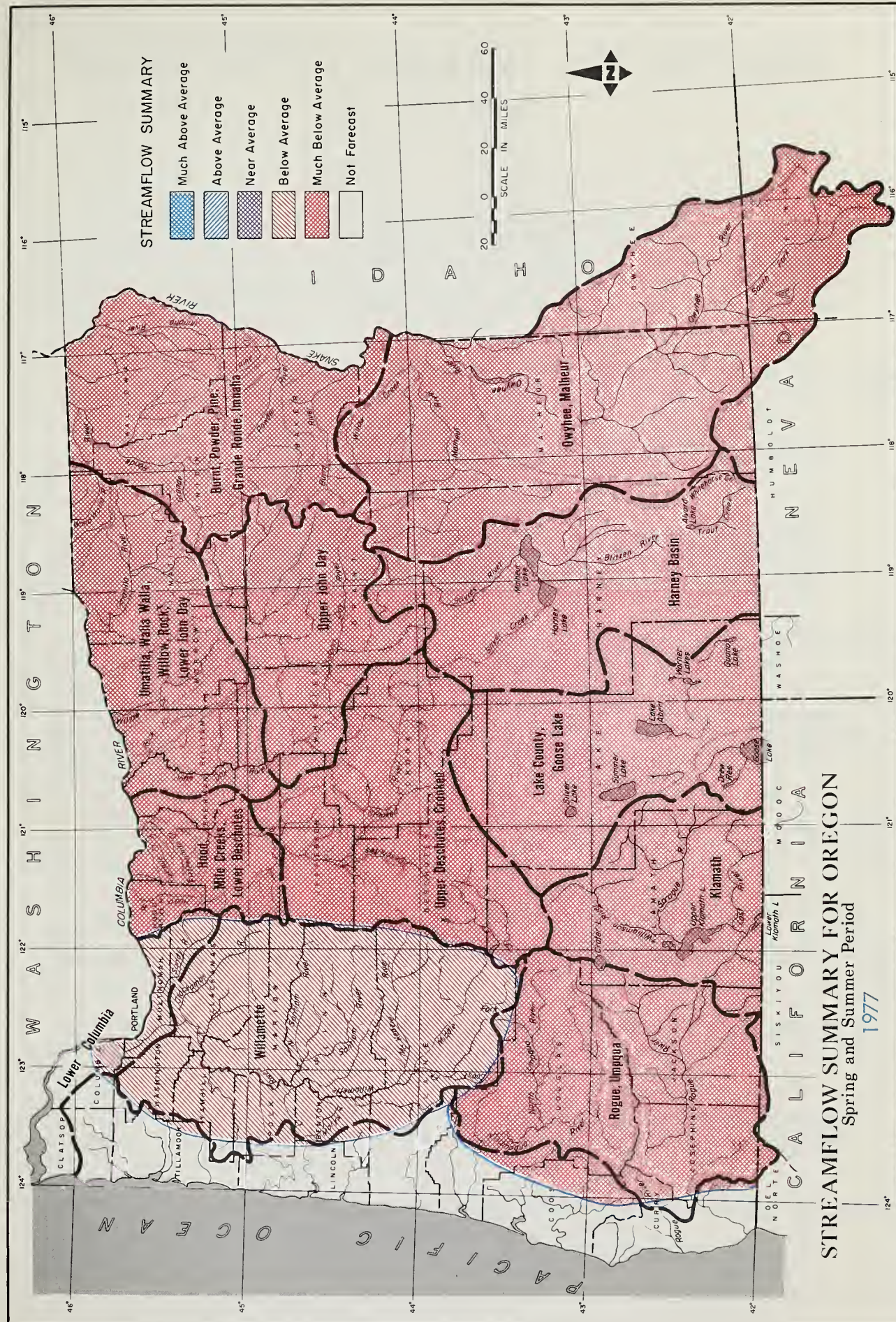
In Cooperation with

OREGON
DEPARTMENT
OF
WATER RESOURCES

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WATER SUPPLY SUMMARY AND OUTLOOK for OREGON

October 1, 1977

The 1977 summer irrigation and water supply season was a very unique one, indeed. Last winter's snowpack and precipitation were record lows and drastically affected the streamflow in the state. As forecast last spring, streamflows were near record lows on many rivers in Eastern Oregon. Western Oregon streams were in better condition from the good rains received during the month of May.

Irrigators with stored supplies fared well over most of the state. There were some areas like the Malheur basin which ran out of water by August first.

Irrigators dependent on direct diversion had poor supplies. As an example, much land dependent on Squaw Creek was not planted and only one cutting of hay harvested.

The dryland crops in Eastern Oregon, such as wheat and peas, were affected severely in some areas. Crop yields were 50 to 75% of normal. Soil moisture in these areas is still poor and next year's crop will also be affected.

Forage growth was poor on much of the rangeland; but in mountain areas, grass growth was good and helped out considerably.

Stock water was a real problem, with ponds, water holes and springs going dry early in the season. Many ranchers had to haul water to livestock and in addition, stock herds were reduced to be compatible with available water and feed.

The dry year benefited some areas in the Willamette Valley, with fields that are too wet in normal years, yielding good crops because of the lowered water table.

Reservoir storage is currently much below normal with some irrigation reservoirs in Eastern Oregon completely dry. Twenty-five principal irrigation reservoirs are storing 773,000 acre feet of water, or 58% of the average for this time of year.

Mountain soil moisture is near normal for this time of year, due to the excellent rains received during August and September, but is less than last year.

A winter with a snowpack of $1\frac{1}{2}$ times normal, and heavy precipitation, is needed in the Eastern part of the state to get back to normal supplies for all users next year.

Representative streamflow for this past summer as expressed as a percent of average versus the April 1 forecasts, is as follows:

Summary continued -

	<u>Period</u>	<u>Observed Flow</u>	<u>April 1 Forecast</u>
Owyhee Net Inflow	April-July	25%	26%
Chewaucan Near Paisley	April-July	13%	11%
Grande Ronde at LaGrande	April-July	54%	56%
Middle Fk. of Willamette Near Oakridge	April-July	74%	62%
Rogue at Raygold	April-July	54%	66%
Klamath Lake Net Inflow	April-July	46%	42%
Silvies Near Burns	April-July	11%	30%

Following, is a summary of water supply conditions and effects, by county.

EASTERN OREGON

Hood River - Glacial silt from melting of the glaciers on Mt. Hood, caused problems for many irrigators in the County. Some acres with inadequate supplies, had problems in sizing fruit, causing the fruit to go to the canner's instead of fresh pack. Some 300 acres had practically no water at all.

Sherman - Adequate irrigation water supplies were available from wells. The grain crop was 65 to 70% of normal, principally, because of the rains in May. Rangeland is in poor condition. Fallow land has inadequate soil moisture for next year's wheat crop.

Gilliam - Irrigation water supplies were 75% of normal. May rains were very beneficial and helped crop production considerably. Fallow land has inadequate soil moisture.

Morrow - Adequate irrigation water was available for lands irrigated from the Columbia. Shortages occurred on the Umatilla, Willow, Rhea and Butter Creek drainages. Dryland grain yields were 50% of normal. Fallow land had inadequate soil moisture and next year's crop will be affected.

Umatilla - Crop production in the Butter Creek area was down 50 to 75% from normal. Some acres normally irrigated, were not even farmed. Users without stored supplies ran out of water early. Irrigators were efficient in use of water that was available because of the shortage that was forecast.

On the Walla Walla, the irrigation season was shorter than usual, with many water conservation practices being used. Dryland crop production was 70% of normal.

Fallow land soil moisture is inadequate.

- more -

Summary continued -

Union - About 2/3 of the irrigated acres had an adequate supply. Irrigators on smaller streams had the worst supplies. Hay production was down 5 to 30%. May and August rains saved users from a potential disaster.

Malheur - The Owyhee project received a full allocation of irrigation water. They will have 125,000 acre feet carryover storage. Vale-Oregon and Warm Springs Irrigation Districts ran out August 1, their reservoirs are now dry.

Antelope reservoir was dry 4 days after irrigation started.

Water supplies from direct diversions varied from no water, to enough for about one-half of the season. Livestock herds were reduced because of poor range growth.

Crook - Ochoco Irrigation District generally had adequate supplies so crops were not hurt much. About 75% of normal supplies were delivered. There will be small carryovers in Ochoco and Prineville reservoirs. Some dryland crops were the worst in recent history.

Irrigators on smaller streams had 2% to 30% normal irrigation with poor crops.

The Upper Crooked river had 30 to 100% of normal irrigation depending on the date of the water right.

Deschutes - Central Oregon Irrigation District delivered 65% of the normal supply with crops generally good. Tumalo Irrigation District, had about one-half of their normal water supplies. Good water management produced good crops. Arnold Irrigation District had adequate supplies. Excellent supplies were available for Swalley Irrigation District. Squaw Creek had about 15% of a normal supply. Much land was not planted, with most farmers getting only one cutting of hay.

Jefferson - Smaller streams had very poor supplies, some none at all. Water supplies from stored water were less than normal, but adequate with good management practices. Crops with these supplies were generally good.

Wasco - Good water management was used to good advantage in the county. Shortage occurred for Rock Creek and Juniper Flat irrigators. Soil moisture is inadequate and there is a lack of water for fall irrigation. Areas with shortages obtained only 1 - 2 cuttings of hay.

Klamath - Stored water supplies were an adequate source for users with access. Shortage occurred in the eastern part of the county for crops and stock water.

Wallowa - Farmers and ranchers responded to early warnings of water shortages and made alterations in their plans to save water. Much less water was used. Grain production was down 20 to 25%. Hay production was also down. Affect of drought was not as severe as it could have been because of early warnings.

Summary continued -

WESTERN OREGON

Multnomah - The rains the last of August and September were very beneficial. Forage supplies were reduced some from the drought. A few wells went dry and a few farm ponds were very low. A better job of irrigation water management was done because of the potential shortages. There were some benefits. Some fields normally too wet because of high water tables were farmed and produced crops.

Clackamas - Thirteen thousand acres had some water shortages. Dryland crops were reduced in yields generally 25%.

Yamhill - A number of wet fields were farmed which usually are not. Normal yields were down 20% but in wet areas yields were up 20 to 70%. A few water shortages occurred late in the season.

Marion - There were beneficial effects, wet fields were farmed with increased yield. Irrigation water supplies were adequate.

Linn - Irrigation water supplies were adequate except from a few small storage ponds.

Polk - Adequate supplies were available from the Willamette River. Shortages occurred on smaller streams as some dropped below the minimum flow requirements. Approximately 4,000 acres were affected. Ponds for stock water dried up earlier than usual.

Washington - Only new water rights affected by shortages and some shallow wells went dry. There were some beneficial effects with wet fields raising good crops. For instance, flood plain wheat yielded double what it would have in a normal year.

Jackson - Irrigation water supplies were 75% of normal. Approximately 25,000 acres were affected by inadequate supplies. There was a 40% reduction in production of crops with principle effects on dryland pasture hay.

Coos - Irrigation water supplies were adequate, except on the smaller streams. Some small acre plots were voluntarily diverted by individuals. Forage supplies, crops and livestock generally were not affected.

Clatsop - Only one instance of water shortage reported and this was a municipal supply. Rains the last of August were very beneficial. Many wells were low, but none were reported dry. Irrigation water was adequate.

- more -

Summary continued -

Tillamook - Adequate supplies, generally no effects.

Curry - Irrigation water was adequate although a few springs did go dry earlier than normal. Forage and crops were on the average better than normal.

Columbia - No noticeable effects.

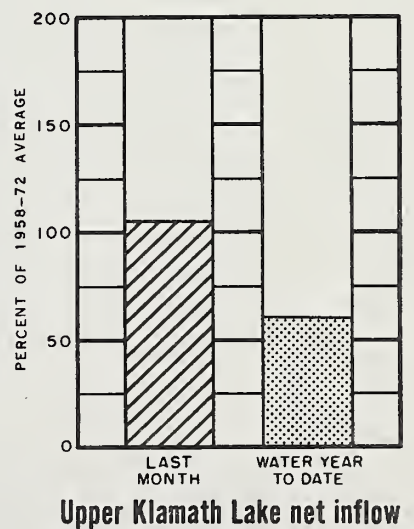
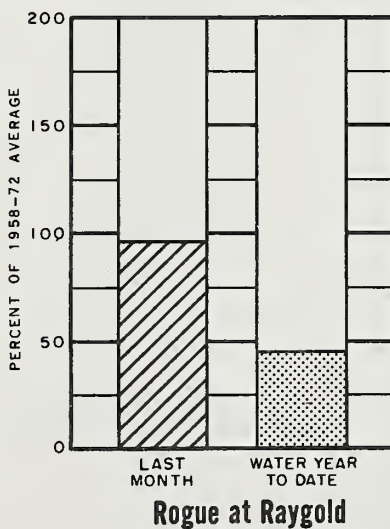
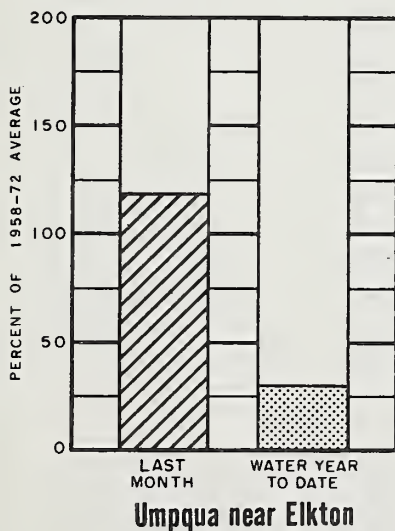
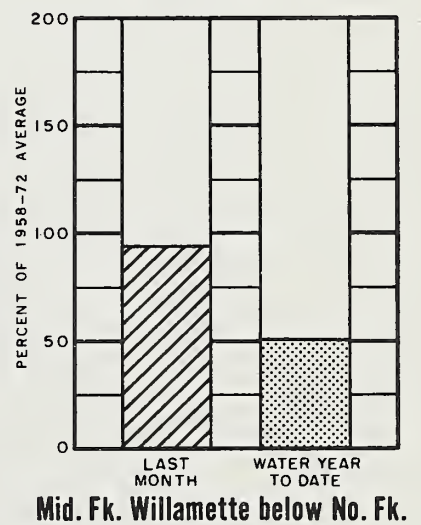
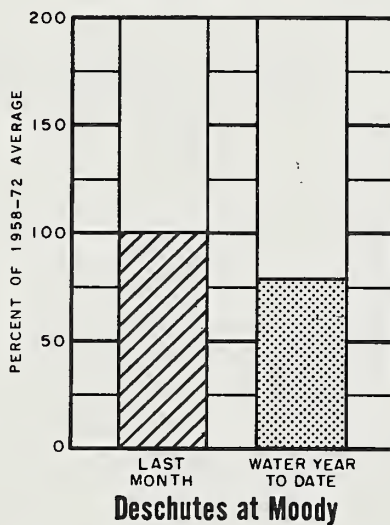
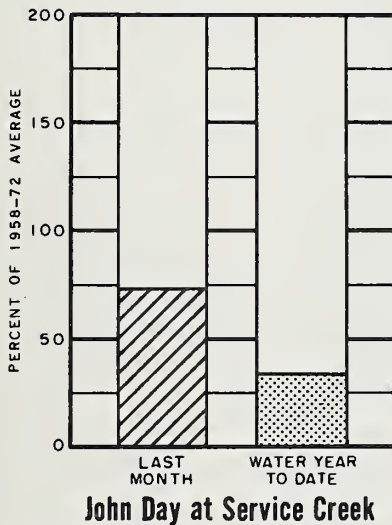
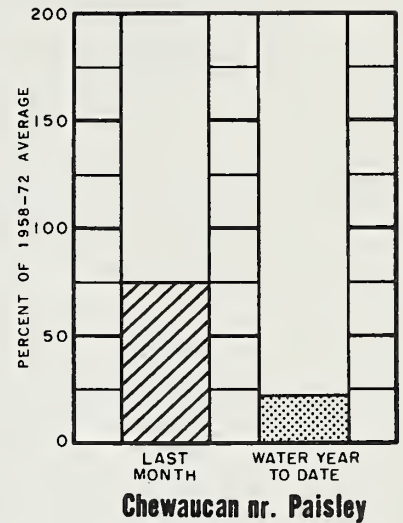
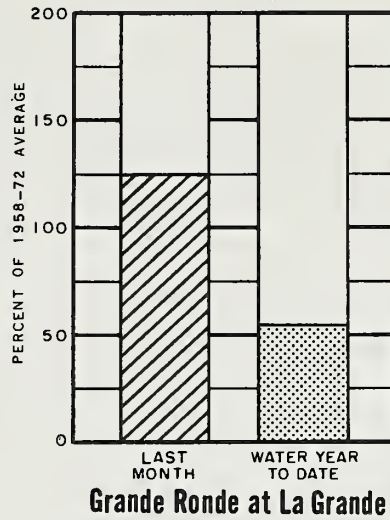
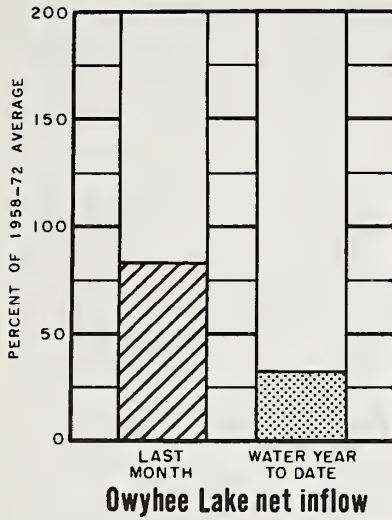
Benton - Irrigation water supplies were reduced about 40% and forage and other crops were affected slightly. August rains were very beneficial.

This report contains data furnished by the Oregon Department of Water Resources, U.S. Geological Survey, NOAA National Weather Service and other cooperators.



CURRENT OREGON STREAMFLOW

OCTOBER 1, 1977



STATUS OF RESERVOIR STORAGE, OCTOBER 1, 1977

RESERVOIR	USABLE CAPACITY (Thous. A. F.)	THOUSANDS ACRE FEET IN STORAGE 1977	THOUSANDS ACRE FEET IN STORAGE 1976	ABOUT OCT. 1 15-Year Average 1958-72
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UPPER COLUMBIA DRAINAGE

Antelope	70.0	No Report	No Report	7.1
Owyhee	715.0	173.3	435.1	320.6
Beulah Reservoir	60.0	0.0	14.6	8.3
Bully Creek	30.0	0.0	6.7	7.2
Warmsprings	191.0	0.0	66.2	50.7
Phillips Lake	73.5	9.7	44.7	39.9
Unity	25.2	1.3	7.3	2.2
Thief Valley	17.4	No Report	12.7	---
Wallowa Lake	37.5	6.2	24.1	14.0
Wolf Creek	10.4	1.3	---	---

LOWER COLUMBIA DRAINAGE

Cold Springs	50.0	2.8	2.9	3.1
McKay	73.8	1.6	12.4	7.8
Ochoco	47.5	2.0	25.8	15.2
Prineville	153.0	38.1	106.1	100.3
Crane Prairie	55.3	16.7	26.9	19.9
Crescent Lake	86.9	34.4	59.2	33.6
Wickiup	200.0	49.8	108.0	42.3
Clear Lake (Wasco)	11.9	0.1	---	1.6
Blue River	85.6	8.6	13.0	---
Cottage Grove	30.0	12.7	12.0	5.5
Cougar	155.2	69.7	93.3	86.2
Detroit	299.9	155.7	170.7	187.4
Dorena	70.5	29.4	28.8	11.9
Fall Creek	115.0	61.8	49.4	15.0
Fern Ridge	94.2	23.8	79.0	62.5
Foster	30.0	25.2	25.0	21.7
Green Peter	270.0	155.3	151.1	91.0
Hills Creek	200.0	32.8	113.4	110.7
Lookout Point	337.2	201.9	182.8	200.2
Timothy Lake	61.7	52.5	61.1	59.7
Henry Hagg Lake	53.0	20.9	31.5	---

WEST COAST DRAINAGE

Fourmile Lake	16.1	1.4	9.8	6.0
Fish Lake	8.0	2.0	5.0	3.0
Howard Prairie	60.0	21.7	48.2	37.0
Hyatt Prairie	16.1	5.5	10.6	8.9
Emigrant Lake	39.0	5.7	11.5	8.8

STATUS OF RESERVOIR STORAGE, OCTOBER 1, 1977
(continued)

RESERVOIR	USABLE CAPACITY (Thous. A.F.)	THOUSANDS ACRE FEET IN STORAGE ABOUT OCT. 1		
		1977	1976	15-Year Average 1958-72

WEST COAST DRAINAGE
(continued)

Upper Klamath	584.0	224.4	370.9	315.9
Gerber	94.0	4.7	36.0	29.9
Clear Lake	440.2	128.5	214.3	165.5
Cottonwood	8.7	0.0	1.3	0.6
Drews	63.0	0.0	20.9	24.4
Thompson Valley	19.5	0.3	---	---

SOIL MOISTURE

DRAINAGE BASIN and/or STATION		Profile (Inches)			Date of Survey	Soil Moisture (Inches)		
Name	Elevation	Depth	Capacity	This Year		Last Year	Average †	
OWYHEE, MALHEUR WATERSHEDS								
Bear Creek (Nev.)	7800	72	16.8	No Report	6.1	--	0.4	
Big Bend (Nev.)	6700	48	16.7	No Report		13.4	13.2	
Blue Mountain Spring	5900	42	16.9	9/28		6.1	5.8	
Mud Flat (Ida.)	5500	48	12.8	No Report		--	9.3	
Rodeo Flat (Nev.)	6800	42	11.0	No Report		7.5	7.4	
Taylor Canyon (Nev.)	6200	48	15.1	No Report		10.5	10.2	
BURNT, POWDER, PINE, GRANDE RONDE, INNAHA WATERSHEDS								
Blue Mountain Summit	5100	36	16.8	No Report	2.3	9.0	7.8	
Dooley Mountain	5430	36	9.2	9/26		2.8	2.9	
Emigrant Springs	3925	48	22.3	9/29		18.9	19.8	
Ladd Summit	3730	48	18.9	9/26		8.4	11.2	
Moss Springs	5850	36	25.8	10/7		14.1	12.5	
Tollgate	5070	48	23.6	No Report		14.2	13.9	
UMATILLA, WALLA WALLA, WILLOW, ROCK, LOWER JOHN DAY WATERSHEDS								
Battle Mountain Summit	4340	48	13.8	No Report	18.9	--	--	
Emigrant Springs	3925	48	22.3	9/29		19.8	15.3	
Tollgate	5070	48	23.6	No Report		14.2	13.9	
UPPER JOHN DAY WATERSHEDS								
Battle Mountain Summit	4340	48	13.8	No Report	6.1	--	--	
Blue Mountain Spring	5900	42	16.9	9/28		6.1	5.8	
Blue Mountain Summit	5100	36	16.8	No Report		9.0	7.8	
Derr	5670	24	9.0	9/28		5.5	5.2	
Marks Creek	4540	36	14.1	9/27		8.3	9.1	
Snow Mountain	6300	48	16.7	9/28		10.5	14.0	
Starr Ridge	5150	36	10.6	9/28		7.5	7.6	
UPPER DESCHUTES, CROOKED WATERSHEDS								
Derr	5670	24	9.0	9/30	5.5	5.2	4.1	
Marks Creek	4540	36	14.1	9/27	8.3	9.1	9.0	
Snow Mountain	6300	48	16.7	9/28	10.5	14.0	10.1	
KLAMATH WATERSHED								
Quartz Mountain	5230	48	15.3	9/27	5.7	5.3	5.5	
LAKE COUNTY, GOOSE LAKE WATERSHEDS								
Camas Creek	5720	42	14.5	9/30	9.8	--	8.8	
Quartz Mountain	5230	48	15.3	9/27	5.7	5.3	5.5	
HARNEY BASIN WATERSHED								
Blue Mountain Spring	5900	42	16.9	9/28	6.1	6.1	5.8	
Silvies	6900	48	16.4	No Report		--	--	
Snow Mountain	6300	48	16.7	9/28	10.5	14.0	10.1	
Starr Ridge	5150	36	10.6	9/28	7.5	7.6	7.3	
Willow-Bald	5000	24	6.6	9/28	3.8	4.8	3.5	

The Following Organizations Cooperate in the Oregon Snow Survey Work

STATE

- Idaho Cooperative Snow Surveys
- Nevada Cooperative Snow Surveys
- Oregon State University
- Oregon Department Of Water Resources
- Soil and Water Conservation Districts of Oregon

COUNTY

- Douglas County Water Resources Survey

FEDERAL

- Department of Agriculture
 - Cooperative Extension Service
 - Forest Service
 - Soil Conservation Service
- Department of Commerce
 - NOAA, National Weather Service
- Department of the Interior
 - Bonneville Power Administration
 - Bureau of Land Management
 - Bureau of Reclamation
 - Fish and Wildlife Service
 - Geological Survey
- Department of National Defense
 - Corps of Army Engineers

PUBLIC UTILITIES

- Pacific Power and Light Company
- Portland General Electric Company
- California-Pacific Utilities Company

MUNICIPALITIES

- City of Baker
- City of La Grande
- City of The Dalles
- City of Walla Walla

IRRIGATION DISTRICTS

- Arnold Irrigation District
- Associated Ditch Companies
- Burnt River Irrigation District
- Central Oregon Irrigation District
- East Fork Irrigation District
- Grants Pass Irrigation District
- Hood River Irrigation District
- Jordan Valley Irrigation District
- Juniper Flat Irrigation District
- Lakeview Water Users, Incorporated
- Medford Irrigation District
- Middle Fork Irrigation District
- North Board of Control - Owyhee Project
- North Unit Irrigation District
- Ochoco Irrigation District
- Rogue River Valley Irrigation District
- South Board of Control - Owyhee Project
- Squaw Creek Irrigation District
- Talent Irrigation District
- Tumalo Project
- Vale - Oregon Irrigation District
- Warm Springs Irrigation District

PRIVATE ORGANIZATIONS

- The Crag Rats, Hood River, Oregon

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
1220 S.W. THIRD AVE.
PORTLAND, OREGON 97204

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with the Snow Survey"*

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